FIG. 1

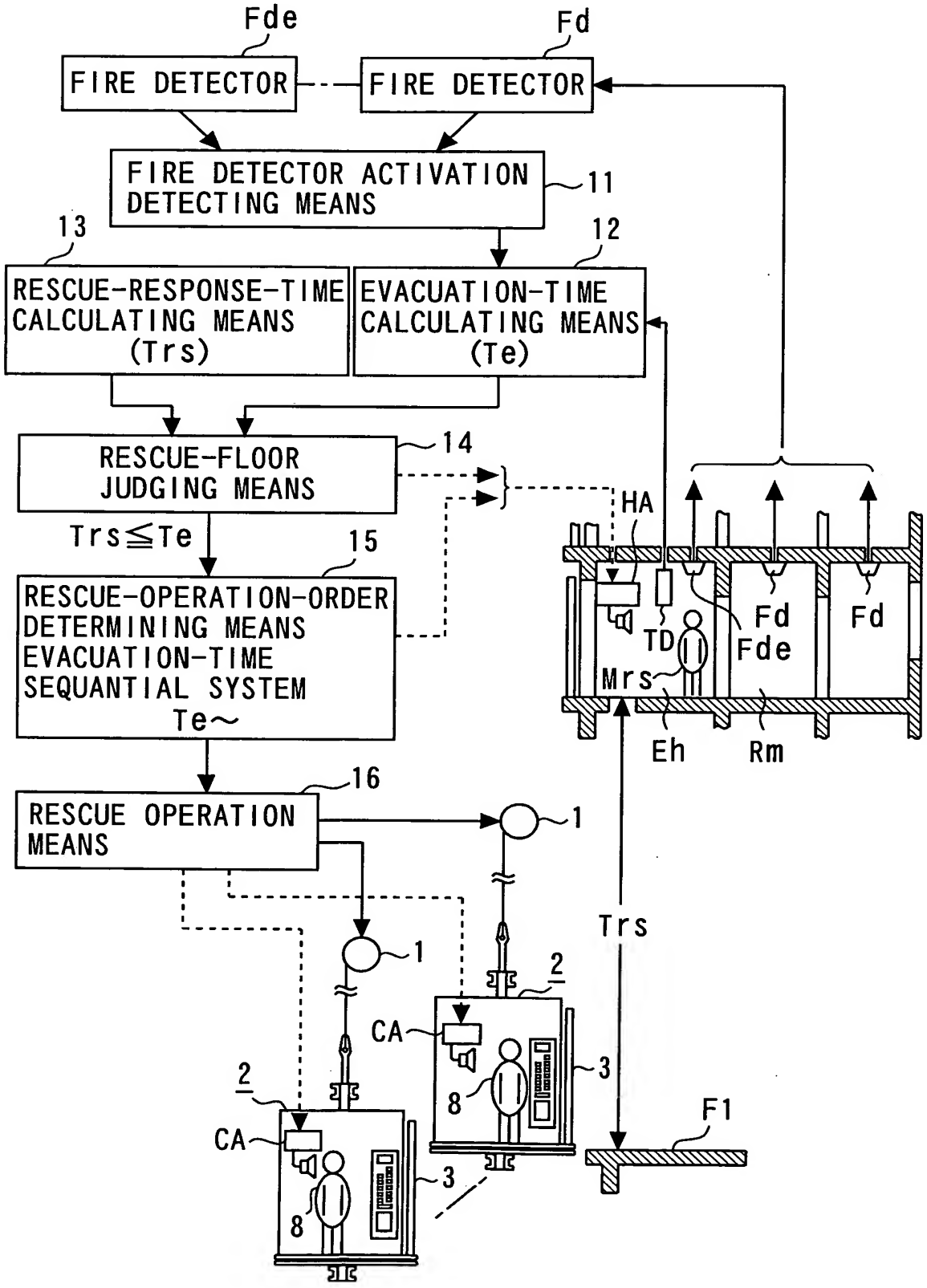

Fde
Fd
FIRE DETECTOR
FIRE DETECTOR
FIRE DETECTOR ACTIVATION DETECTING MEANS
11
13
12
RESCUE-RESPONSE-TIME CALCULATING MEANS (Trs)
EVACUATION-TIME CALCULATING MEANS (Te)
RESCUE-FLOOR JUDGING MEANS
14
Trs≦Te
15
RESCUE-OPERATION-ORDER DETERMINING MEANS EVACUATION-TIME SEQUANTIAL SYSTEM Te~
16
RESCUE OPERATION MEANS
HA
TD
Fd
Fde
Fd
Mrs
Eh
Rm
1
1
2
2
CA
CA
3
3
8
8
Trs
F1

FIG. 2

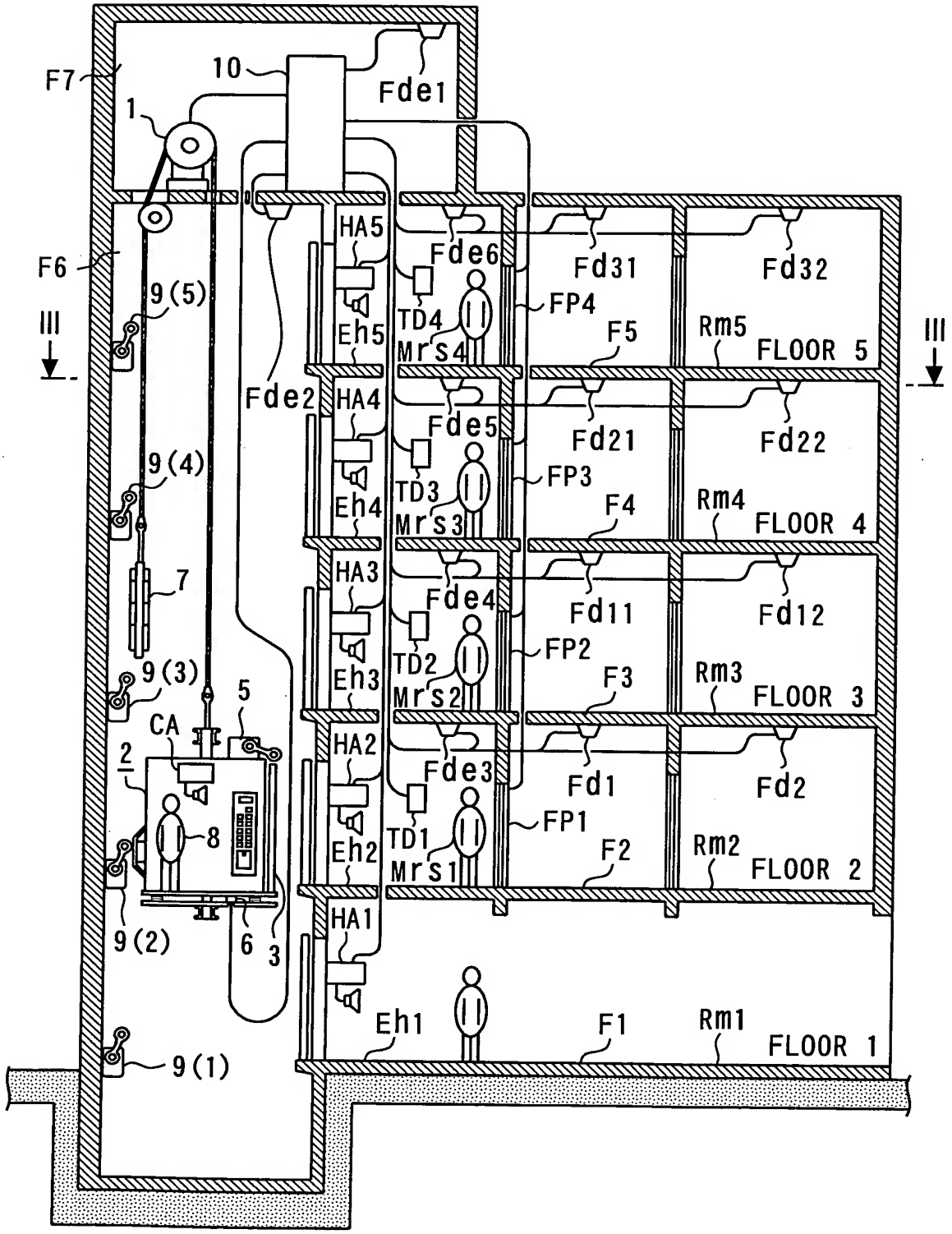

F7
10
Fde1
1
HA5
Fde6
Fd31
Fd32
F6
9(5)
III
TD4
FP4
Eh5
Mrs4
F5
Rm5
FLOOR 5
III
Fde2
HA4
Fde5
Fd21
Fd22
9(4)
TD3
FP3
Eh4
Mrs3
F4
Rm4
FLOOR 4
7
HA3
Fde4
Fd11
Fd12
TD2
FP2
9(3)
Eh3
Mrs2
F3
Rm3
FLOOR 3
5
CA
HA2
Fde3
Fd1
Fd2
2
TD1
FP1
8
Eh2
Mrs1
F2
Rm2
FLOOR 2
HA1
9(2)
6
3
Eh1
F1
Rm1
FLOOR 1
9(1)

FIG. 3

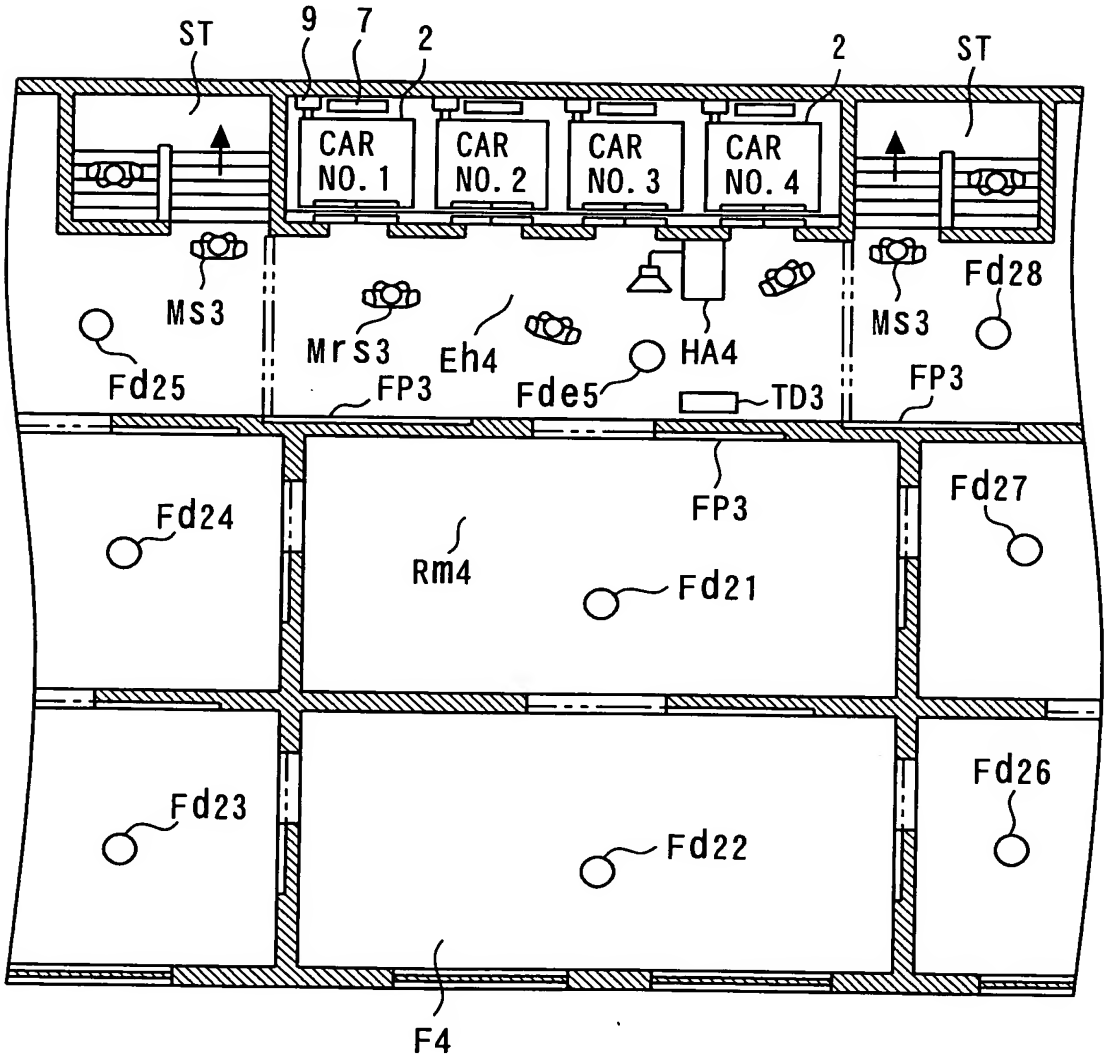
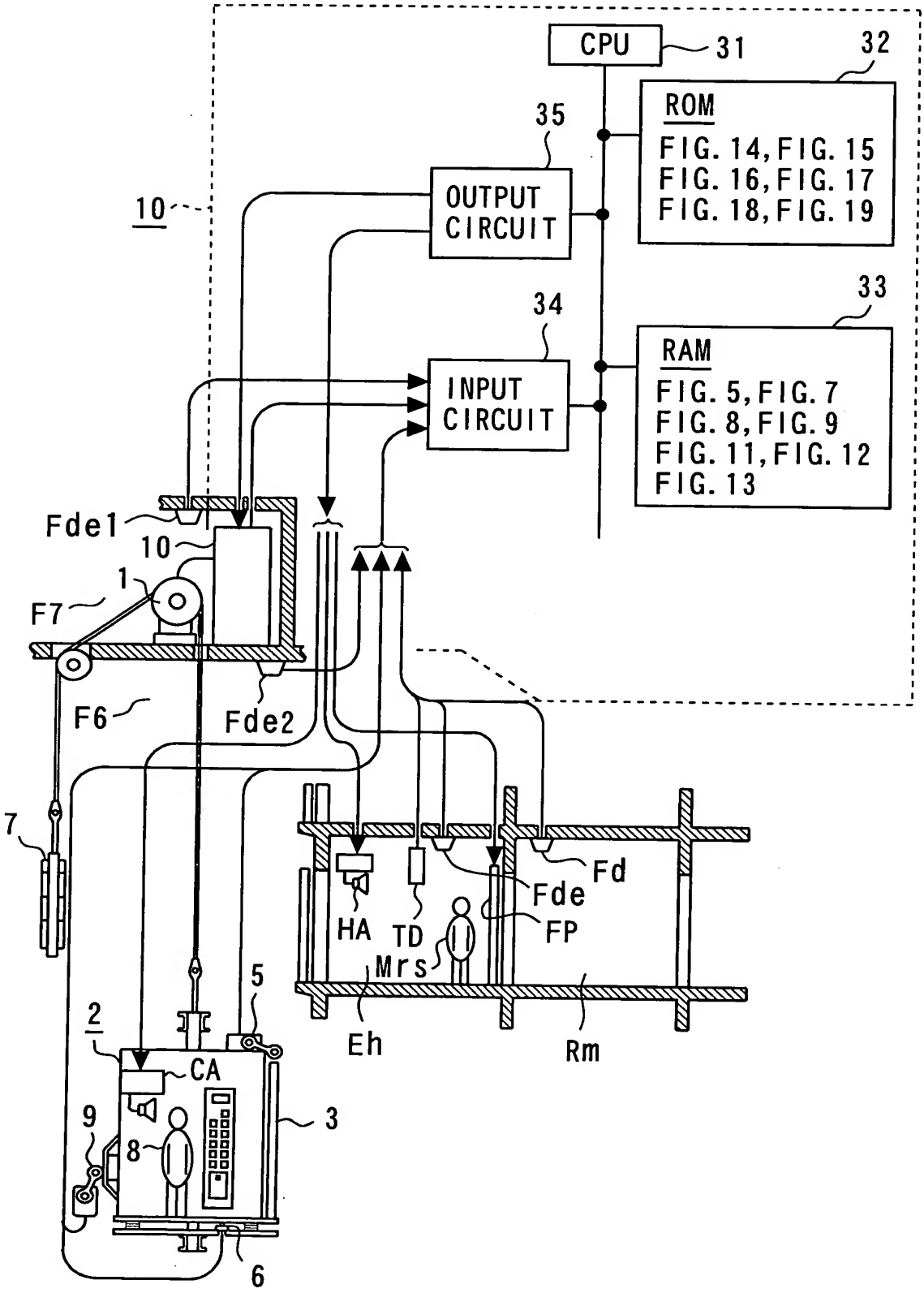

ST
9
7
2
2
ST
CAR NO. 1
CAR NO. 2
CAR NO. 3
CAR NO. 4
MS3
MS3
Fd28
Mrs3
Eh4
HA4
Fd25
FP3
Fde5
TD3
FP3
FP3
Fd27
Fd24
Rm4
Fd21
Fd26
Fd23
Fd22
F4

FIG. 4


CPU
31
32
ROM
FIG. 14, FIG. 15
FIG. 16, FIG. 17
FIG. 18, FIG. 19
35
OUTPUT CIRCUIT
10
34
33
RAM
FIG. 5, FIG. 7
FIG. 8, FIG. 9
FIG. 11, FIG. 12
FIG. 13
INPUT CIRCUIT
Fde1
10
1
F7
F6
Fde2
7
HA
TD
Mrs
Fde
FP
Fd
Eh
Rm
5
2
CA
9
8
3
6

5/15

FIG. 5

MEMORY ADDRESS B+(j)	FLOOR FL(j)	ENROLLMENT Mn(j)	NUMBER OF EMERGENCY-STAIRCASE-EVACUEE Ms(j)	NUMBER OF EVACUEE USED ELEVATOR Me(j)
j:1	FLOOR2 F2	300	290	10
	FLOOR3 F3	300	250	50
	FLOOR4 F4	400	100	300
	FLOOR5 F5	300	50	250

33a:EVACUEE-NUMBER TABLE

FIG. 6

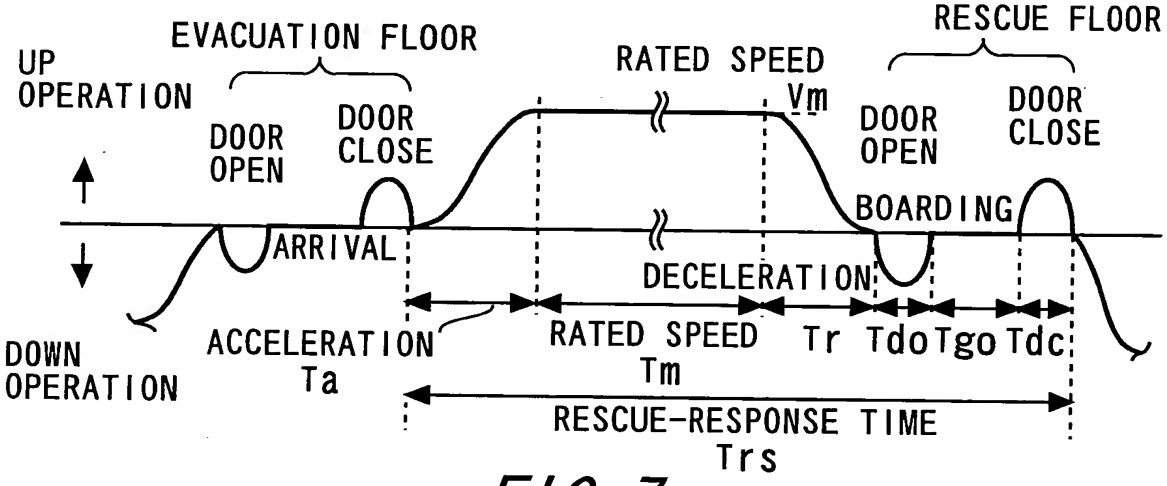


FIG. 7

RATED SPEED Vm=90m/min, IN CASE OF 11PASSENGER UNIT:SECONDS

MEMORY ADDRESS G+(k)	FLOOR FL FL(k)	DISTANCE FROM EVACUATION FLOOR Ds(k)	ACCELERATION TIME Ta(k)	TIME AT RATED SPEED Tm(k)	DECELERATION TIME Tr(k)	DOOR OPENING-CLOSING TIME Toc(k) (Tdo+Tdc)	BOARDING TIME Tgo(k)	RESCUE-RESPONSE TIME Trs(k)
k:1	FLOOR2 F2	3	1.5	0.5	1.5	4	9	19.5
	FLOOR3 F3	6	1.5	2.5	1.5	4	9	24.5
	FLOOR4 F4	9	1.5	4.5	1.5	4	9	29.5
	FLOOR5 F5	12	1.5	6.5	1.5	4	9	34.5

33b:RESCUE-RESPONSE-TIME TABLE

FIG. 8

MEMORY ADDRESS E+(g)	FIRE DETECTOR Fde(g)	FLOOR FL(g)	ACTIVATION STATE FNe(g)	
g:1	Fde1	MACHINEROOM F7	OFF	
g:2	Fde2	HOISTWAY F6	OFF	
g:3	Fde3	FLOOR 2 F2	OFF	ELEVATOR HALL Eh
	Fde4	FLOOR 3 F3	OFF	
	Fde5	FLOOR 4 F4	OFF	
	Fde6	FLOOR 5 F5	OFF	

33c:FIRE-DETECTOR-ACTIVATION TABLE
(MACHINEROOM F7, HOISTWAY F6, ELEVATOR HALL Eh)

FIG. 9

MEMORY ADDRESS D+(m)	FIRE DETECTOR Fde(m)	FLOOR FL(m)	ACTIVATION STATE FN(m)
m:1	Fde1	FLOOR 2 F2	OFF
	Fde2	FLOOR 2 F2	OFF
	Fde3	FLOOR 2 F2	OFF
	Fde21	FLOOR 4 F4	OFF
	Fde22	FLOOR 4 F4	ON
	Fde23	FLOOR 4 F4	ON
	Fde28	FLOOR 5 F5	OFF

33d:FIRE-DETECTOR-ACTIVATION TABLE (ROOM Rm)

FIG. 10

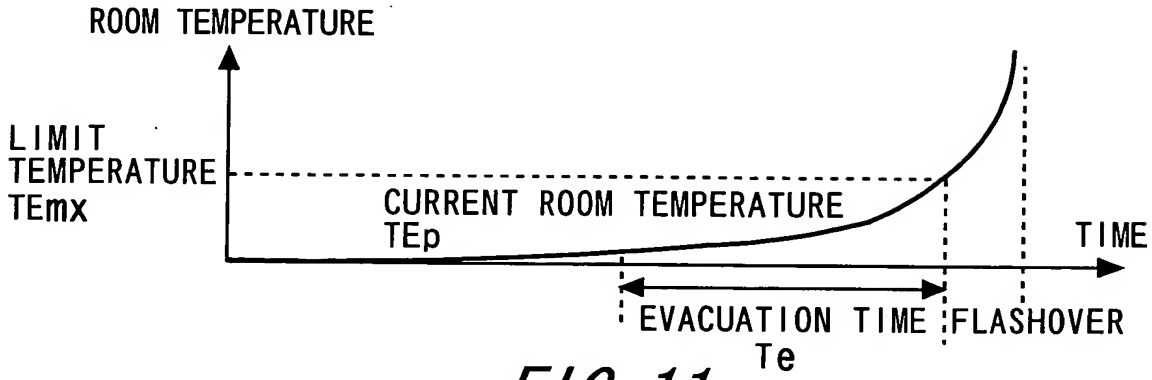


FIG. 11

MEMORY ADDRESS A+(i)	ELEVATOR HALL FL(i)	CURRENT ROOM TEMPERATURE TEp(i)	EVACUATION TIME Te(i)
i:1	FLOOR 2 F2	24℃	90MINUTES
	FLOOR 3 F3	25℃	80MINUTES
	FLOOR 4 F4	70℃	10MINUTES
	FLOOR 5 F5	50℃	20MINUTES

33e:EVACUATION-TIME TABLE

FIG. 12

MEMORY ADDRESS U+(p)	FLOOR FL(p)	EVACUATION TIME Te(p)
p:1	FLOOR 4 F4	10MINUTES
	FLOOR 5 F5	20MINUTES
	FLOOR 3 F3	80MINUTES
	FLOOR 2 F2	90MINUTES

33f:RESCUE-OPERATION-ORDER TABLE (EVACUATION-TIME SEQUENTIAL)

FIG. 13

MEMORY ADDRESS F+(h)	FLOOR FL(h)	NUMBER OF EVACUEE USED ELEVATOR Me(h)	NUMBER OF REMAINDER Mrs(h)
h:1	FLOOR 2 F2	10	10
	FLOOR 3 F3	50	50
	FLOOR 4 F4	300	260
	FLOOR 5 F5	250	250

33g:REMAINDER-NUMBER TABLE

FIG. 14

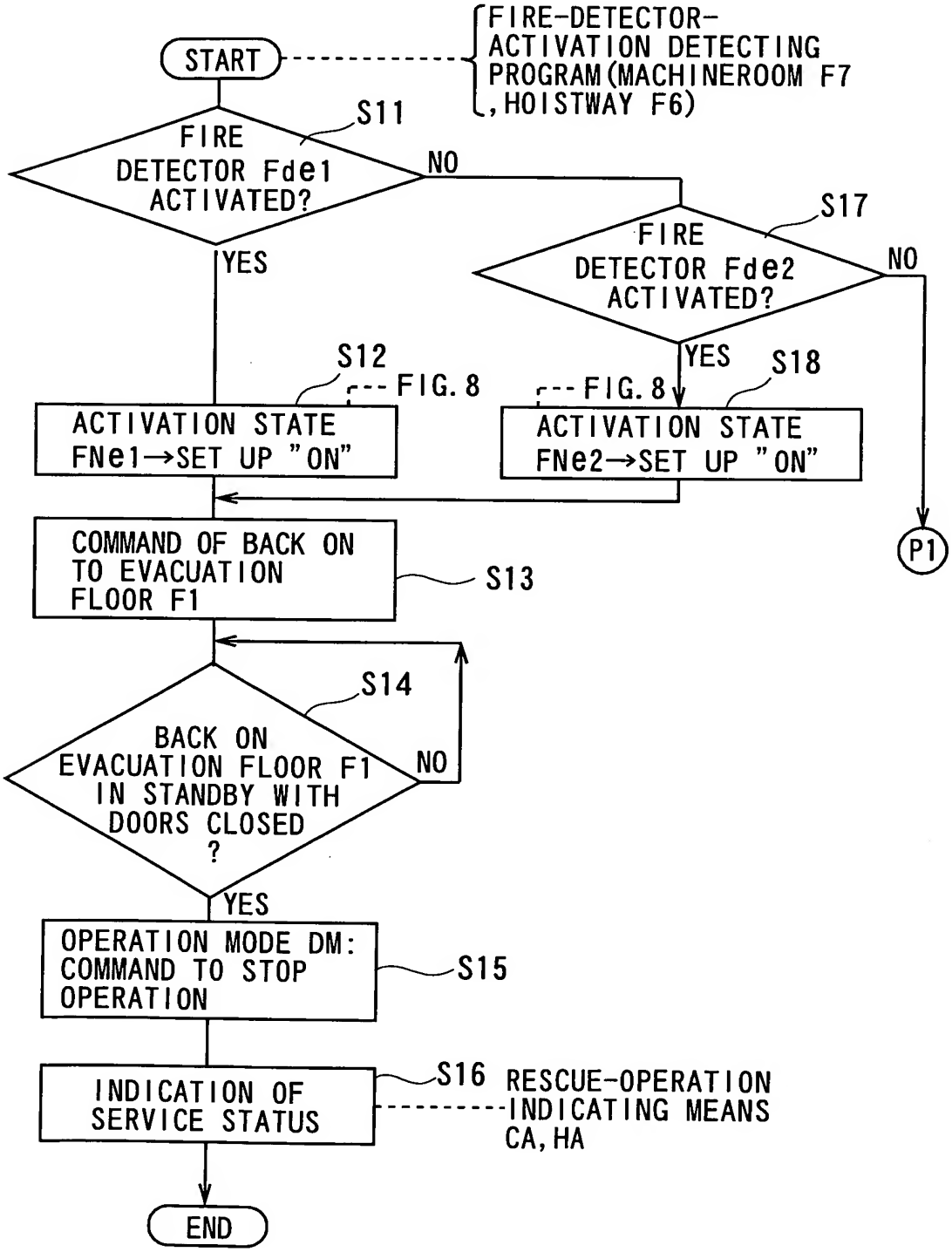

START
FIRE-DETECTOR-ACTIVATION DETECTING PROGRAM (MACHINEROOM F7, HOISTWAY F6)
S11
FIRE DETECTOR Fde1 ACTIVATED?
NO
YES
S17
FIRE DETECTOR Fde2 ACTIVATED?
NO
YES
S12
FIG. 8
ACTIVATION STATE FNe1→SET UP "ON"
FIG. 8
S18
ACTIVATION STATE FNe2→SET UP "ON"
P1
COMMAND OF BACK ON TO EVACUATION FLOOR F1
S13
S14
BACK ON EVACUATION FLOOR F1 IN STANDBY WITH DOORS CLOSED ?
NO
YES
OPERATION MODE DM: COMMAND TO STOP OPERATION
S15
INDICATION OF SERVICE STATUS
S16
RESCUE-OPERATION INDICATING MEANS CA, HA
END

FIG. 15

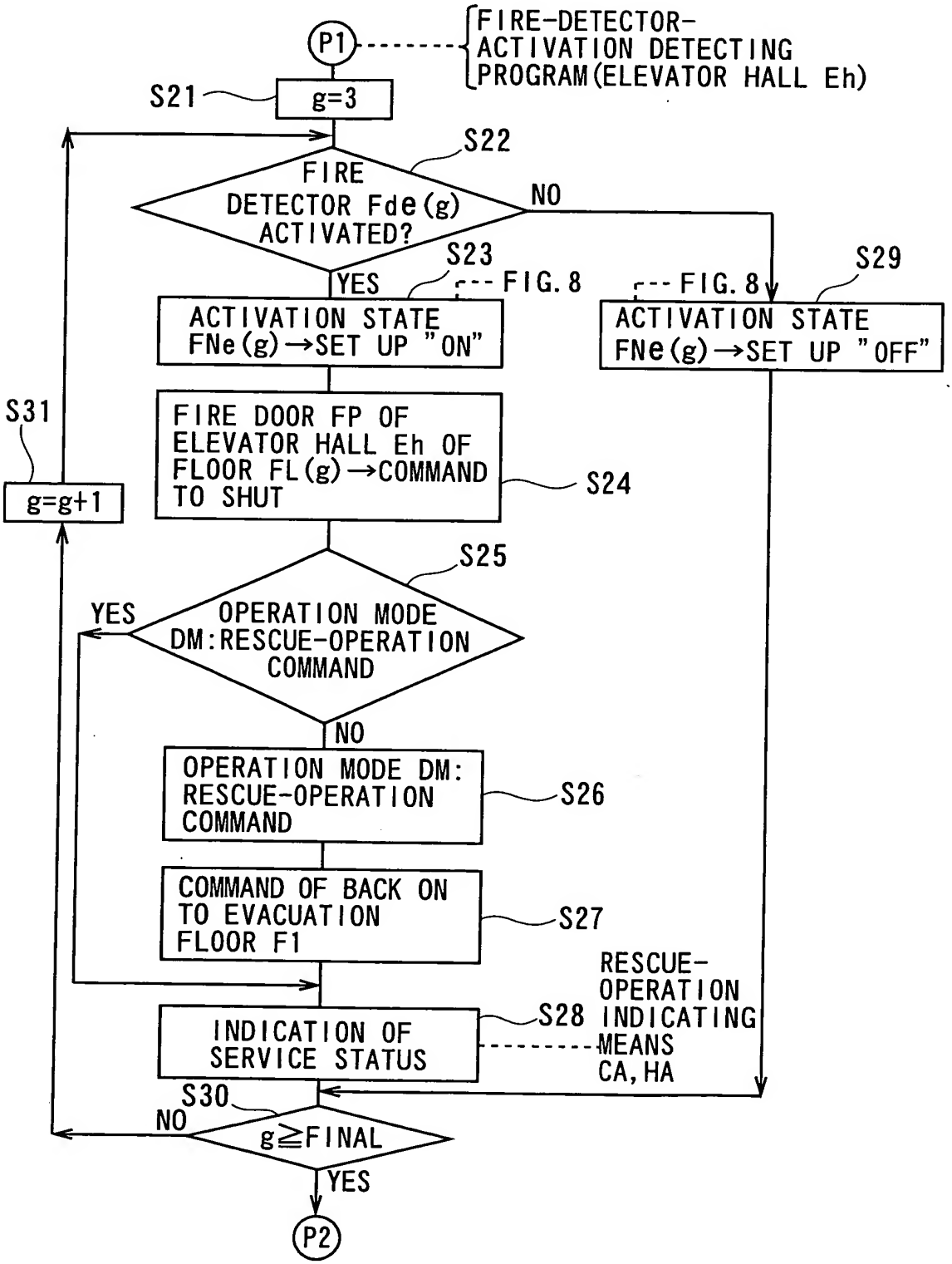

P1
FIRE-DETECTOR-ACTIVATION DETECTING PROGRAM(ELEVATOR HALL Eh)
S21
g=3
S22
FIRE DETECTOR Fde(g) ACTIVATED?
NO
YES
S23
FIG. 8
ACTIVATION STATE FNe(g)→SET UP "ON"
S29
FIG. 8
ACTIVATION STATE FNe(g)→SET UP "OFF"
S31
g=g+1
FIRE DOOR FP OF ELEVATOR HALL Eh OF FLOOR FL(g)→COMMAND TO SHUT
S24
S25
YES
OPERATION MODE DM:RESCUE-OPERATION COMMAND
NO
OPERATION MODE DM: RESCUE-OPERATION COMMAND
S26
COMMAND OF BACK ON TO EVACUATION FLOOR F1
S27
INDICATION OF SERVICE STATUS
S28
RESCUE-OPERATION INDICATING MEANS CA, HA
S30
NO
g≧FINAL
YES
P2

FIG. 16

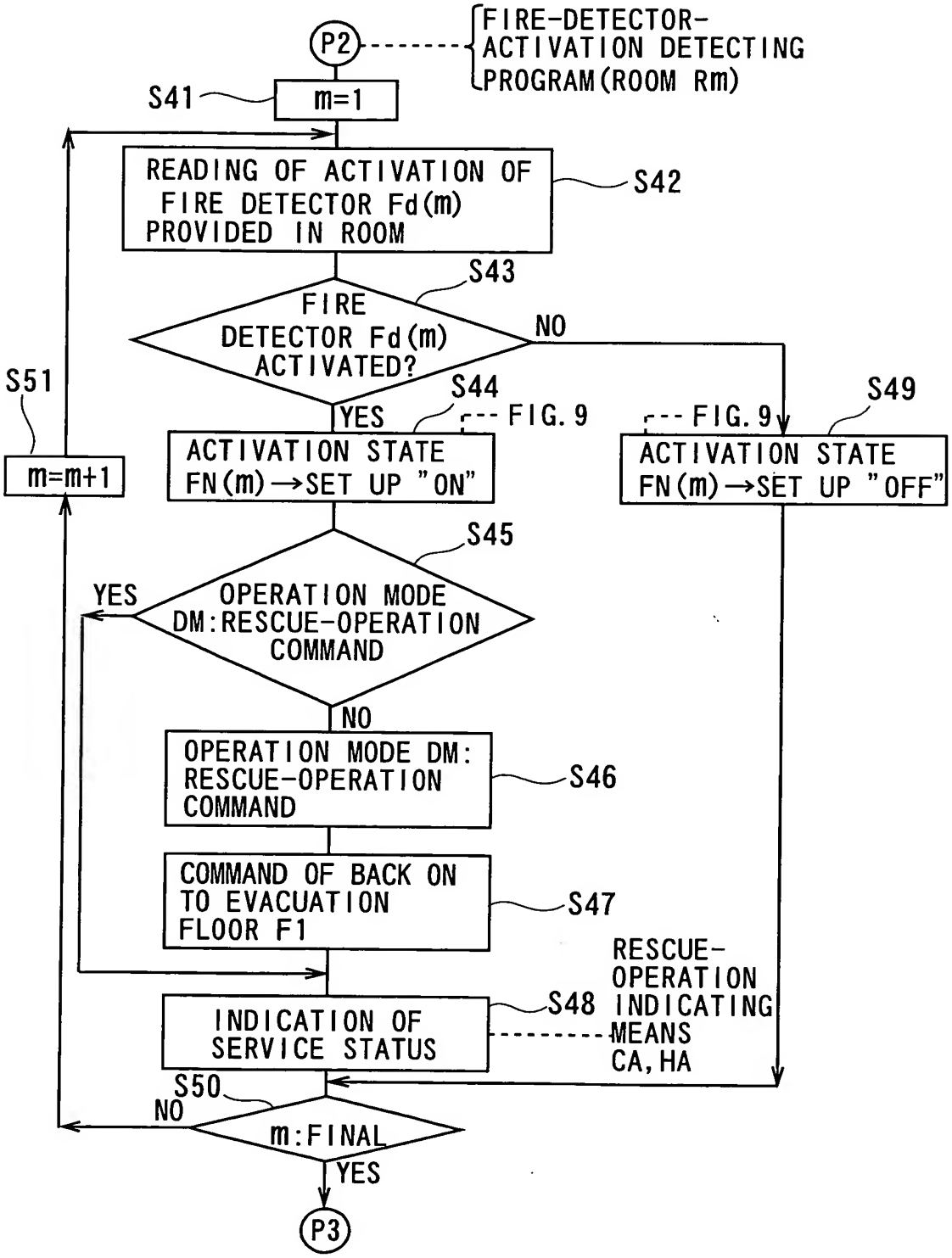

P2
FIRE-DETECTOR-ACTIVATION DETECTING PROGRAM(ROOM Rm)
S41
m=1
READING OF ACTIVATION OF FIRE DETECTOR Fd(m) PROVIDED IN ROOM
S42
S43
FIRE DETECTOR Fd(m) ACTIVATED?
NO
YES
S44
FIG. 9
ACTIVATION STATE FN(m)→SET UP "ON"
S49
FIG. 9
ACTIVATION STATE FN(m)→SET UP "OFF"
S51
m=m+1
S45
YES
OPERATION MODE DM:RESCUE-OPERATION COMMAND
NO
OPERATION MODE DM: RESCUE-OPERATION COMMAND
S46
COMMAND OF BACK ON TO EVACUATION FLOOR F1
S47
RESCUE-OPERATION INDICATING MEANS CA, HA
INDICATION OF SERVICE STATUS
S48
S50
NO
m:FINAL
YES
P3

FIG. 17

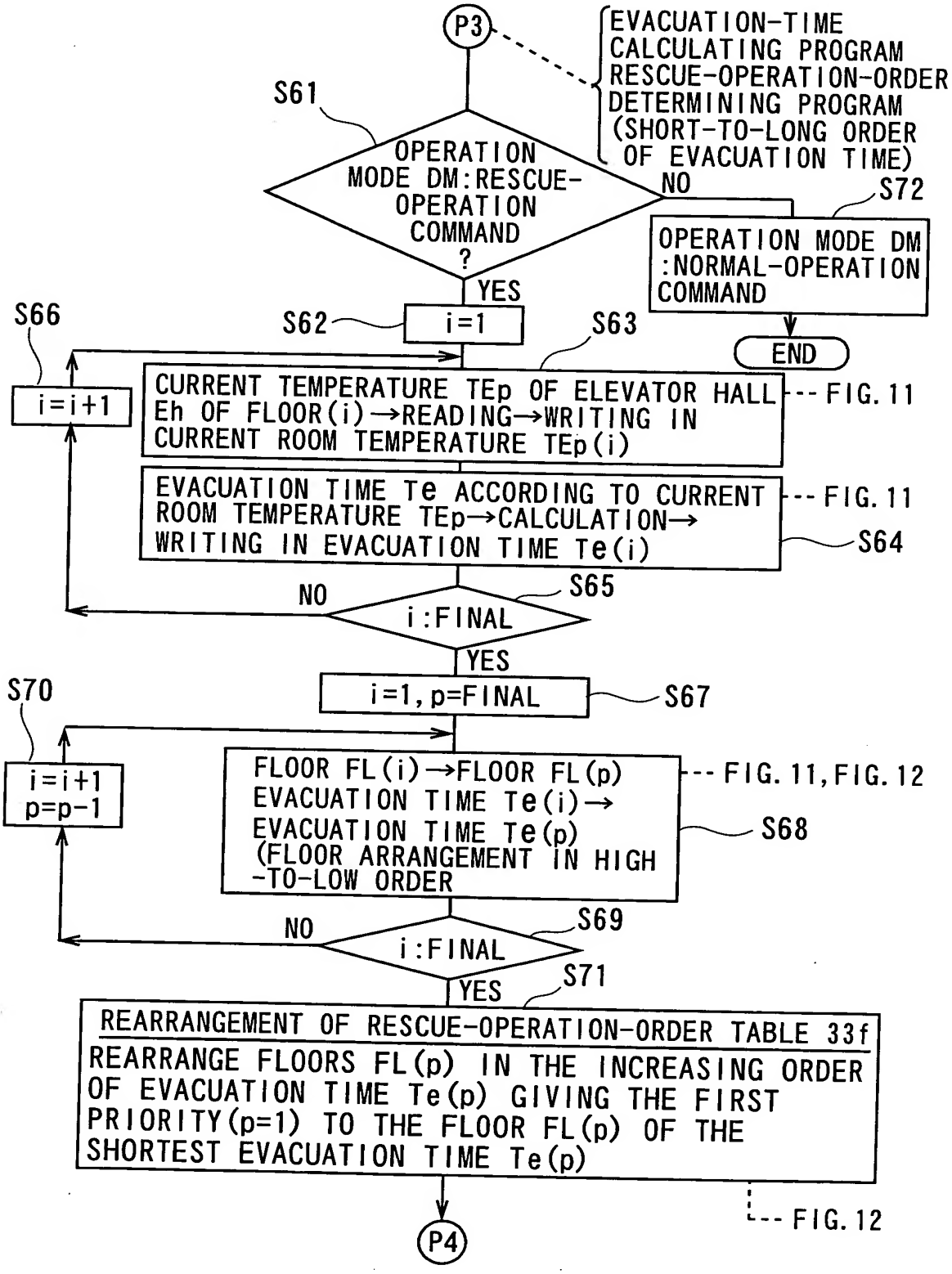

P3
EVACUATION-TIME CALCULATING PROGRAM
RESCUE-OPERATION-ORDER DETERMINING PROGRAM
(SHORT-TO-LONG ORDER OF EVACUATION TIME)
S61
OPERATION MODE DM:RESCUE-OPERATION COMMAND ?
NO
S72
OPERATION MODE DM :NORMAL-OPERATION COMMAND
END
YES
S62
i=1
S63
S66
i=i+1
CURRENT TEMPERATURE TEp OF ELEVATOR HALL Eh OF FLOOR(i)→READING→WRITING IN CURRENT ROOM TEMPERATURE TEp(i)
--- FIG. 11
EVACUATION TIME Te ACCORDING TO CURRENT ROOM TEMPERATURE TEp→CALCULATION→ WRITING IN EVACUATION TIME Te(i)
--- FIG. 11
S64
NO
S65
i:FINAL
YES
S70
i=i+1, p=FINAL
S67
i=i+1 p=p-1
FLOOR FL(i)→FLOOR FL(p) EVACUATION TIME Te(i)→ EVACUATION TIME Te(p) (FLOOR ARRANGEMENT IN HIGH -TO-LOW ORDER
--- FIG. 11, FIG. 12
S68
NO
S69
i:FINAL
YES
S71
REARRANGEMENT OF RESCUE-OPERATION-ORDER TABLE 33f
REARRANGE FLOORS FL(p) IN THE INCREASING ORDER OF EVACUATION TIME Te(p) GIVING THE FIRST PRIORITY(p=1) TO THE FLOOR FL(p) OF THE SHORTEST EVACUATION TIME Te(p)
--- FIG. 12
P4

FIG. 18

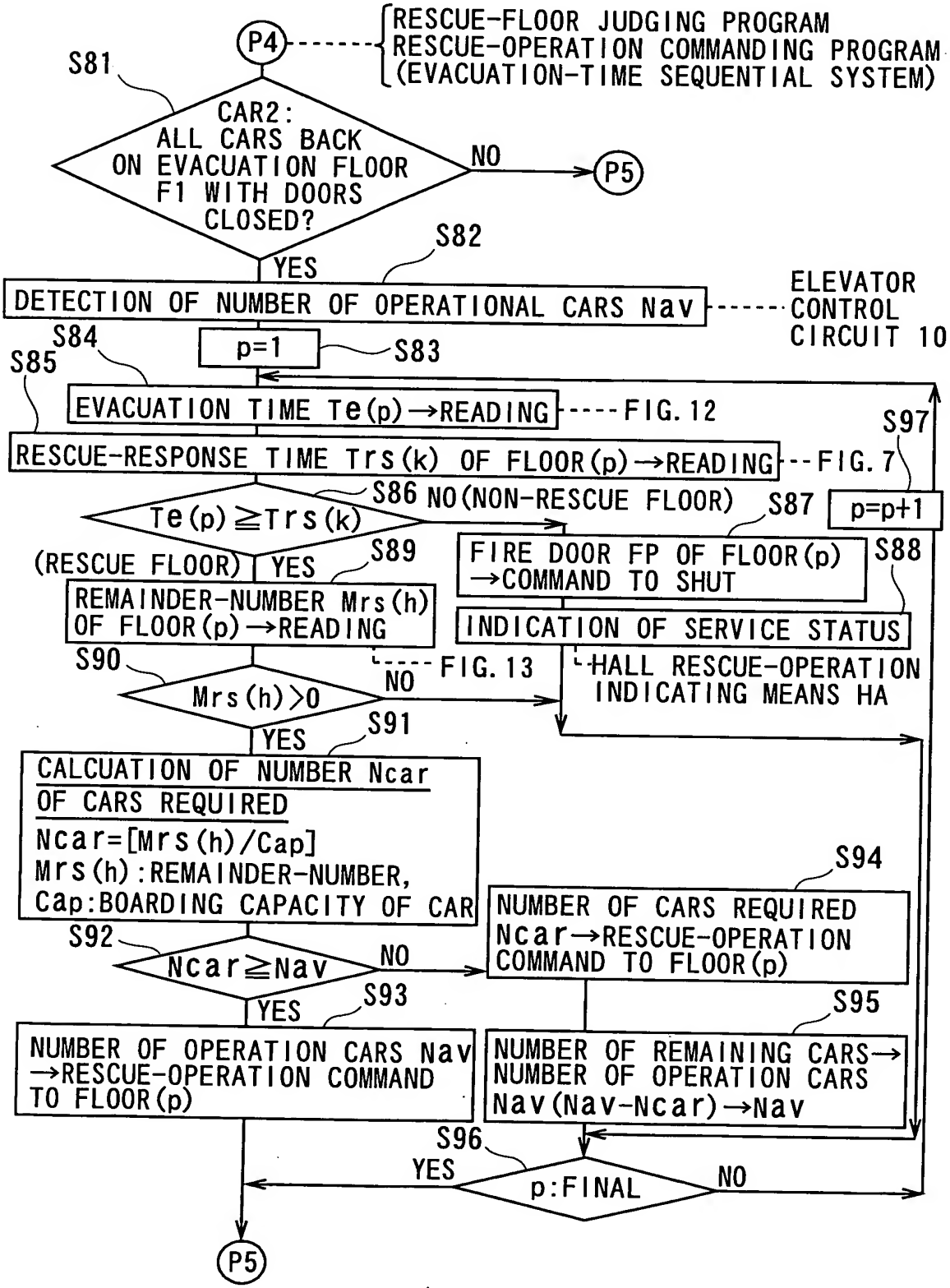

P4
RESCUE-FLOOR JUDGING PROGRAM
RESCUE-OPERATION COMMANDING PROGRAM
(EVACUATION-TIME SEQUENTIAL SYSTEM)
S81
CAR2: ALL CARS BACK ON EVACUATION FLOOR F1 WITH DOORS CLOSED?
NO
P5
YES
S82
DETECTION OF NUMBER OF OPERATIONAL CARS Nav
ELEVATOR CONTROL CIRCUIT 10
S84
p=1
S83
S85
EVACUATION TIME Te(p)→READING
FIG. 12
RESCUE-RESPONSE TIME Trs(k) OF FLOOR(p)→READING
FIG. 7
S97
S86
Te(p)≧Trs(k)
NO(NON-RESCUE FLOOR)
S87
p=p+1
(RESCUE FLOOR)
YES
S89
REMAINDER-NUMBER Mrs(h) OF FLOOR(p)→READING
FIRE DOOR FP OF FLOOR(p) →COMMAND TO SHUT
S88
INDICATION OF SERVICE STATUS
S90
FIG. 13
Mrs(h)>0
NO
HALL RESCUE-OPERATION INDICATING MEANS HA
YES
S91
CALCUATION OF NUMBER Ncar OF CARS REQUIRED
Ncar=[Mrs(h)/Cap]
Mrs(h):REMAINDER-NUMBER,
Cap:BOARDING CAPACITY OF CAR
S94
NUMBER OF CARS REQUIRED Ncar→RESCUE-OPERATION COMMAND TO FLOOR(p)
S92
Ncar≧Nav
NO
YES
S93
S95
NUMBER OF OPERATION CARS Nav →RESCUE-OPERATION COMMAND TO FLOOR(p)
NUMBER OF REMAINING CARS→ NUMBER OF OPERATION CARS Nav(Nav-Ncar)→Nav
S96
YES
p:FINAL
NO
P5

FIG. 19

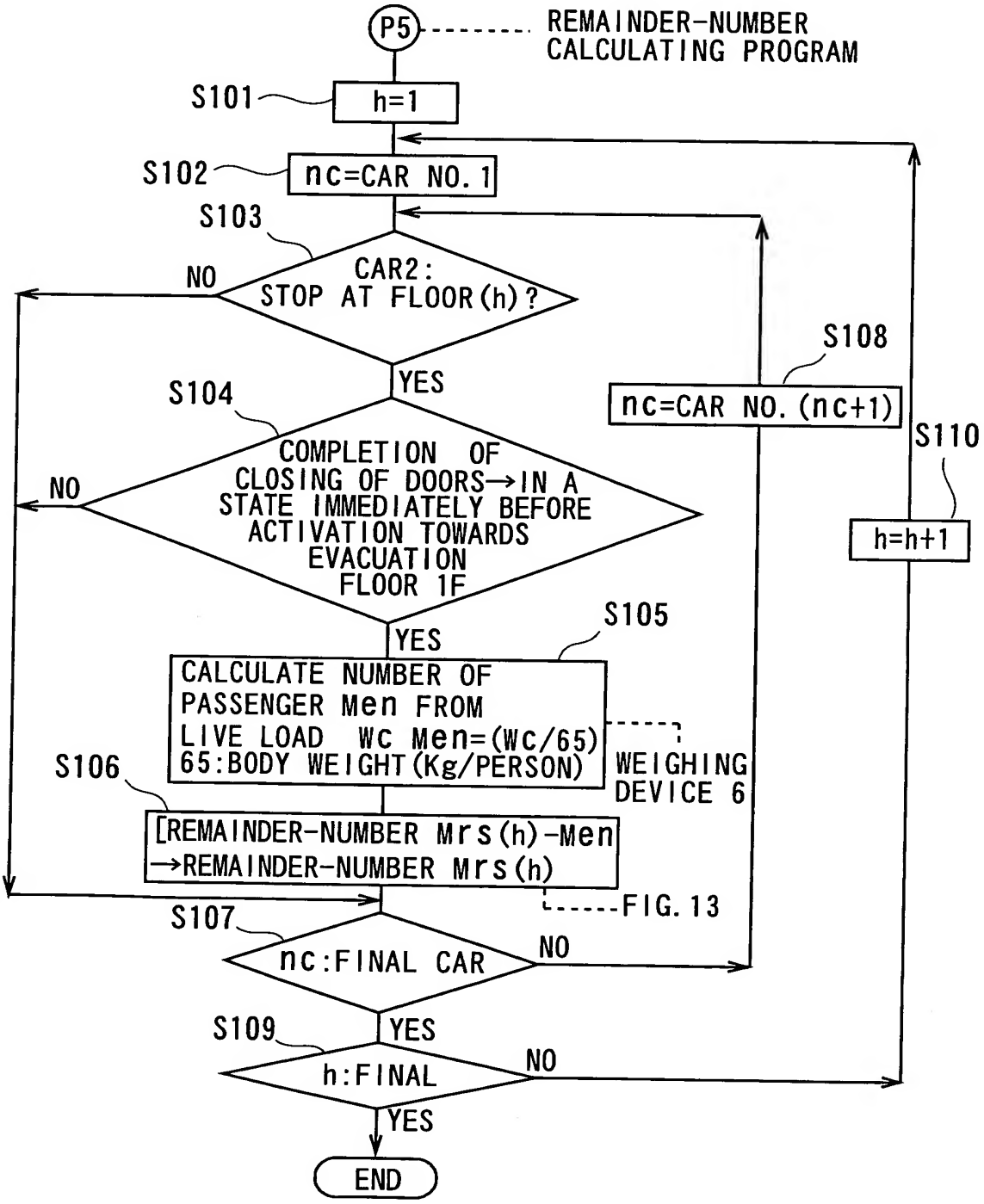

P5
REMAINDER-NUMBER CALCULATING PROGRAM
S101
h=1
S102
nc=CAR NO. 1
S103
CAR2: STOP AT FLOOR(h)?
NO
YES
S104
COMPLETION OF CLOSING OF DOORS→IN A STATE IMMEDIATELY BEFORE ACTIVATION TOWARDS EVACUATION FLOOR 1F
NO
YES
S105
CALCULATE NUMBER OF PASSENGER Men FROM LIVE LOAD Wc Men=(Wc/65) 65:BODY WEIGHT(Kg/PERSON)
WEIGHING DEVICE 6
S106
[REMAINDER-NUMBER Mrs(h)-Men →REMAINDER-NUMBER Mrs(h)
FIG. 13
S107
nc:FINAL CAR
NO
YES
S108
nc=CAR NO. (nc+1)
S109
h:FINAL
NO
YES
S110
h=h+1
END

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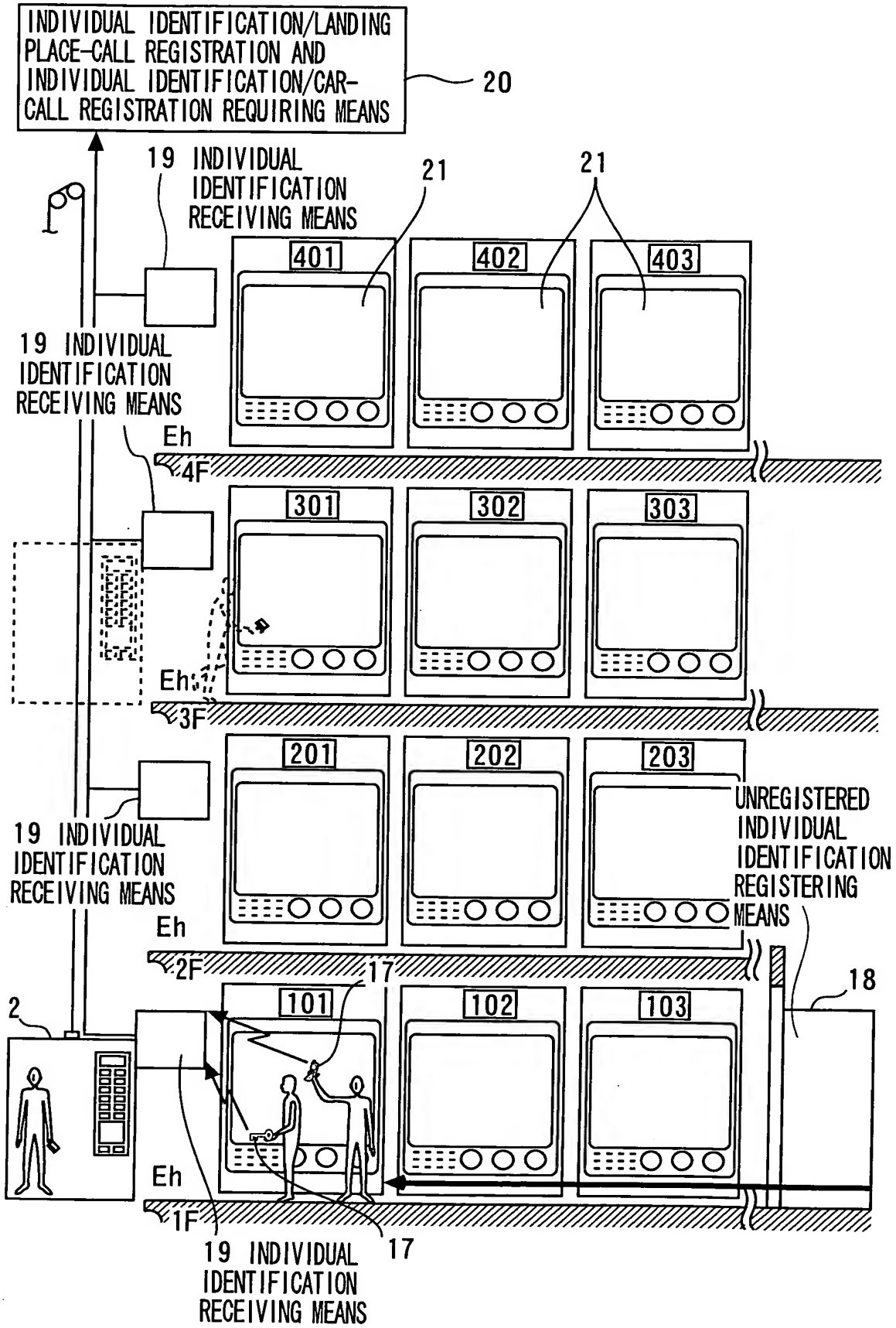
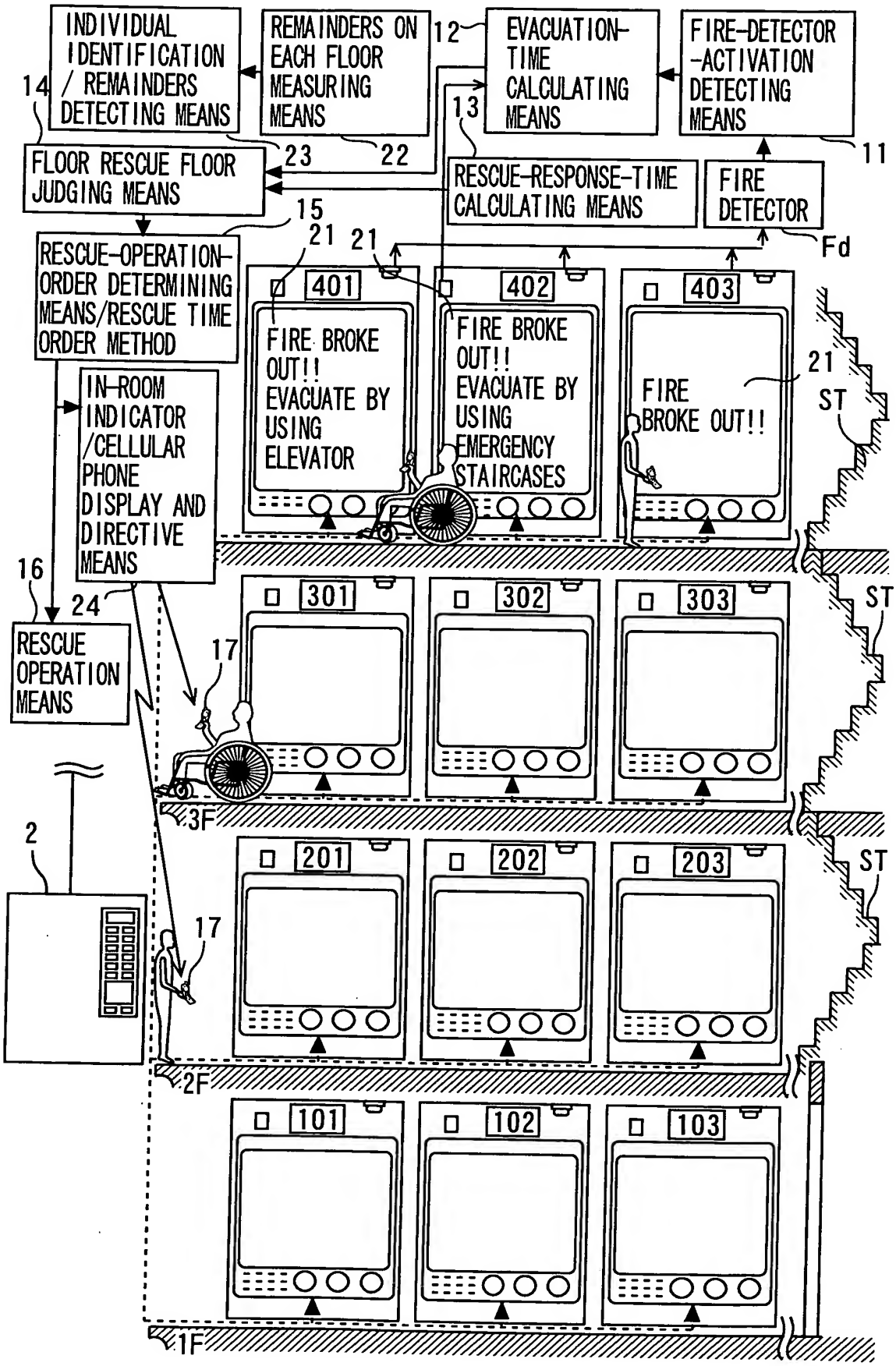
FIG. 20


INDIVIDUAL IDENTIFICATION/LANDING PLACE-CALL REGISTRATION AND INDIVIDUAL IDENTIFICATION/CAR-CALL REGISTRATION REQUIRING MEANS
20
19 INDIVIDUAL IDENTIFICATION RECEIVING MEANS
21
21
401
402
403
19 INDIVIDUAL IDENTIFICATION RECEIVING MEANS
Eh
4F
301
302
303
Eh
3F
201
202
203
19 INDIVIDUAL IDENTIFICATION RECEIVING MEANS
UNREGISTERED INDIVIDUAL IDENTIFICATION REGISTERING MEANS
Eh
2F
17
18
2
101
102
103
Eh
1F
19 INDIVIDUAL IDENTIFICATION RECEIVING MEANS
17

15/15

FIG. 21


INDIVIDUAL IDENTIFICATION / REMAINDERS DETECTING MEANS
REMAINDERS ON EACH FLOOR MEASURING MEANS
EVACUATION-TIME CALCULATING MEANS
FIRE-DETECTOR-ACTIVATION DETECTING MEANS
FLOOR RESCUE FLOOR JUDGING MEANS
RESCUE-RESPONSE-TIME CALCULATING MEANS
FIRE DETECTOR
RESCUE-OPERATION-ORDER DETERMINING MEANS/RESCUE TIME ORDER METHOD
IN-ROOM INDICATOR /CELLULAR PHONE DISPLAY AND DIRECTIVE MEANS
RESCUE OPERATION MEANS
FIRE BROKE OUT!! EVACUATE BY USING ELEVATOR
FIRE BROKE OUT!! EVACUATE BY USING EMERGENCY STAIRCASES
FIRE BROKE OUT!!
401
402
403
301
302
303
201
202
203
101
102
103
ST
3F
2F
1F
11
12
13
14
15
16
17
21
22
23
24
Fd
2